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On the Use of Magic at National Laboratories (Article style, not strict, using jpg logos and graphics)

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Abstract

It would appear that many projects carried out at the national DOE laboratories could benefit from some magic. This report examines the requirements for the use of magic and gives a few specific examples on how magic can be used to advance the state of the art.

Acknowledgment

Thanks to Ron Weasly for valuable discussions and helping us finding new uses of magic.

The format of this report is based on information found in [1].

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Preface

Although muggles usually have only limited experience with magic, and many even dispute its existence, it is worthwhile to be open minded and explore the possibilities.

Summary

Once a certain level of mistrust and skepticism has been overcome, magic finds many uses in todays science and engineering. In this report we explain some of the fundamental spells and instruments of magic and wizardry. We then conclude with a few examples on how they can be used in daily activities at national Laboratories.

Nomenclature

alohomoral spell to open locked doors and containers

leviosa spell to levitate objects

remembrall device to alert you that you have forgotten something

wand device to execute spells

On the Use of Magic at National Laboratories (Article style, not strict, using jpg logos and graphics)

1 Introduction

In [2] we have shown that magic has a use in muggle science. In this report we address the use of magic specifically to the science and engineering performed at the DOE national laboratories. Let us begin with a description of a couple of basic magical shapes. We use the circle and the square to make our point.

1.1 The Circle

Figure 1 shows one of the basic magical shapes. It appears in many spells and has many important properties.

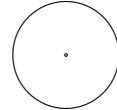


Figure 1. A circle is one of basic magical shapes. It has many important properties. Note, for example, that every point along its circumference is at exactly the same distance from the center. A truly magical property.

Whole books have been written about the circle and similar, lesser shapes. So, it would be presumptuous to attempt to even list some of its properties and magical uses. Simply admire the shape in Figure 1 and its power will soon engulf you in ideas and beautiful feelings of completeness.

1.1.1 Small Circles

We also need an example of a subsubsection to make sure tiles and table of content entries work for those.

And while we are at it, we might as well check paragraph spacing. Although, we will do that again in the bla section.

1.2 The Square

Figure 2 illustrates another famous magical shape. We will show some of its uses in later chapters, but we wanted to introduce it here because this is a good place for another figure.

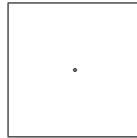


Figure 2. A square is another of the basic magical shapes. It is not quite as powerful as the circle. It has some similarities (note that the four corners all have the same distance to the center), and has many fine uses in everyday magic.

1.3 The Dot

We also need a figure with a short caption. In order to do this, we introduce the dot. Figure 3 shows the shape of a dot.



Figure 3. A simple dot

1.4 Tables and Such

In order to test our class file, we also need to have some tables. One should be enough for our purposes, so here it is: Table 1. On second thought, we need another one to test the list of tables with multiple entries. So, we introduce Table 2.

2 A Section With Subfigures

The subfigure package used to cause problems until James Gruetzner and Todd Pitts found out that the subfigure package uses `addcontentsline`, which is redefined in the SAN-

Table 1. This superb table lists a few of the more important magical shapes and some of their properties. Be aware that this condensed list can by no means describe all the properties or shapes in use by modern magic.

Name	Number of corners	Importance	Shape
circle	0	high	○
square	4	medium	◊
triangle	3	low	△

Table 2. A magic square

1	15	14	4
12	6	7	9
8	10	11	5
13	3	2	16

Dreport class. The class uses the ifthen package, but it is not loaded at the time the subfigure package uses addcontentsline. The new code avoids using the ifthen package. Have a look at Figure 4 for an example.

3 A Long Section

We need a long section to test two-sided formatting. Therefore, we introduce the concept of *bla*. We will discover in a moment, that there are many bla's in this section. Without further ado, here they are.



(a) A Hyppogriff



(b) A Dragon

Figure 4. Magical Creatures.

4 Conclusion

Of course, no report would be complete without some conclusions. This section is where they would go, if we had some.

References

- [1] Tamara K. Locke. Guide to preparing SAND reports. Technical report SAND98-0730, Sandia National Laboratories, Albuquerque, New Mexico 87185 and Livermore, California 94550, May 1998.
- [2] Harry Potter. On the use of magic in muggle science. *Journal of Magic and Wizardry*, 784(3):121–130, 2002.
- [3] Rolf Riesen. Do not cite this. *Journal of Magic and Wizardry*, 784(3):121–130, 2002.

A Historical Perspective

This is an example of an appendix.

If we follow [1] strictly, we would have to have a separate bibliography section for each appendix. The style file doesn't provide that, but it can be done using the `bibunits` and `chapterbib` packages.

If there are many subsections in an appendix, it should also have its own table of contents. Again, the SAND report class file does not provide that functionality.

A.1 The Past a Long Time Ago

This is where we talk about things so old nobody can verify them. We are safe.

A.2 The Past More Recently

Now we have to be a little bit more careful, since records exist from that time, and some people still alive actually lived back then.

B Some Other Appendix

Just to show what a second Appendix would look like. It contains a table. Each appendix is supposed to be self-contained, so tables and figures are not supposed to show up in the main table of contents. There can be a separate table of contents for each appendix.

Table B.1. A small table

A	B
C	D

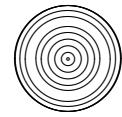


Figure B.1. Dizzy yet?

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